Mathematics Grade 4

When do you use mathematics? You use it every single day. You use it when you buy something at the store and ask yourself, "Do I have enough money?" "Did I get the correct change back?" Before you set your alarm clock, you think about how much time you will need to get ready in the morning. When you share things with your friends or your brothers and sisters, you want to be sure to divide equally. People use mathematics every day in their jobs. All jobs from firefighters to building contractors use mathematics. Even if you're not sure what you want to do when you grow up, learning mathematics will give you a lot more choices to pick from later. You will discover that mathematics can be a lot of fun!

About the Test

The AIMS DPA Mathematics test contains approximately 80 multiple -choice questions. Fifty-five of the items are AIMS questions. Fifteen items are *TerraNova* and AIMS questions, and ten items are *TerraNova* questions. Calculators are not allowed; however, the calculations required can be readily handled with pencil and paper. This is not a timed test. You can take as much time as you need to do your best. Most of the questions will be based on general understanding of mathematics and problem-solving skills.

Hints for Taking AIMS DPA Mathematics

- Remember! This is not a timed test! Take as much time as you need and do your best work.
- Estimate an answer first so you can check if your answer is reasonable.
- Calculators are not allowed in this test, so be careful with your calculations and double-check your work.
- Look at all the answer choices and choose the best one.

Sample Questions for Mathematics

What To Expect From This Section

This AIMS DPA Student Guide for Mathematics provides examples of the format and types of questions that will appear on AIMS DPA Mathematics. An attempt has been made to provide a sampling of the types of questions that might be asked; however, not every concept in each strand has a corresponding sample question in this guide. An answer key for all mathematics sample questions is provided in the appendices.

Strand 1: Number Sense and Operations

General concepts you should know:

- Addition and subtraction of two three-digit whole numbers.
- Fractions (halves, thirds, fourths, eighths, and tenths), including adding and subtracting of fractions with common denominators.
- Read, write, and order (smallest to largest and largest to smallest) whole numbers up to one thousand.
- Place value concepts.
- Expanded notation.
- Counting money, and adding and subtracting money up to $20.00.
- Evaluate reasonableness of results using a variety of techniques, including estimation.

1 What is the solution to the problem shown below?

$$\begin{array}{r} 5182 \\ -\ 1359 \\ \hline \end{array}$$

A 3823

B 3833

C 4823

D 4833

2 Which of the following is true?

A $3\frac{1}{7} > 3\frac{2}{7}$

B $3\frac{1}{3} < 3\frac{2}{6}$

C $3\frac{5}{8} > 3\frac{6}{8}$

D $3\frac{2}{5} < 3\frac{3}{5}$

3 What is the solution to the problem shown below?

$$\frac{5}{9} + \frac{3}{9} = \square$$

A $\frac{1}{9}$

B $\frac{2}{9}$

C $\frac{8}{9}$

D $\frac{9}{9}$

4 What is the solution to the problem shown below?

$8\overline{)72}$

A 9

B 8

C 7

D 6

5 Which is closest to 1043×15?

A 16,000

B 15,500

C 15,000

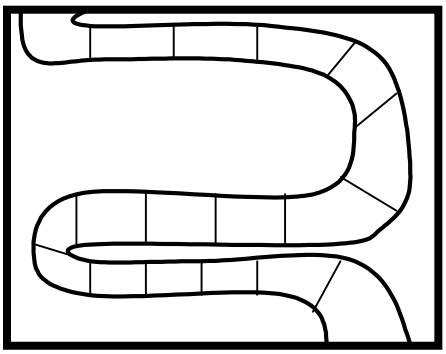
D 14,500

Strand 2: Data Analysis, Probability, and Discrete Math

General concepts you should know:

- Collect, record, and organize data from surveys and probability experiments.
- Identify largest, smallest, most often recorded (mode), least often and middle (median).
- Make and label graphs and solve problems using graphs, charts and tables.
- Name possible outcomes of probability experiments and predict the most likely or least likely outcome.
- Make a diagram of possible combinations.

6 Alyce made-up the board game shown below. She doesn't want to have any of the same colors next to each other.



What is the least number of colors she will need to color all areas of the game board?

A 5

B 4

C 3

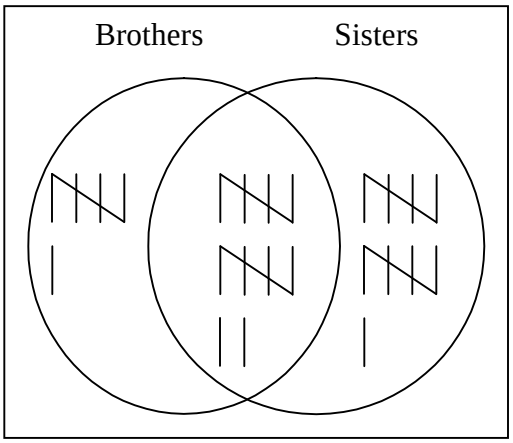
D 2

7 Ms. Heizer asked the students in her class who have at least one brother or sister if they had brothers or sisters. The list below shows the results.

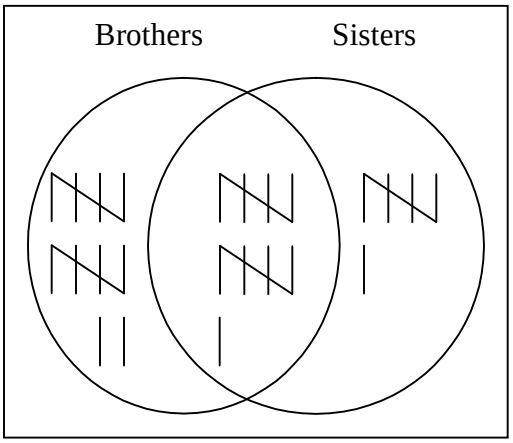
- 6 had brothers only
- 11 had sisters only
- 12 had both brothers and sisters

Which Venn diagram **best** represents this data?

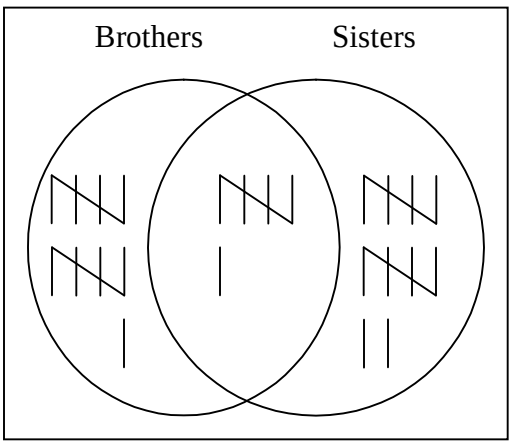
A



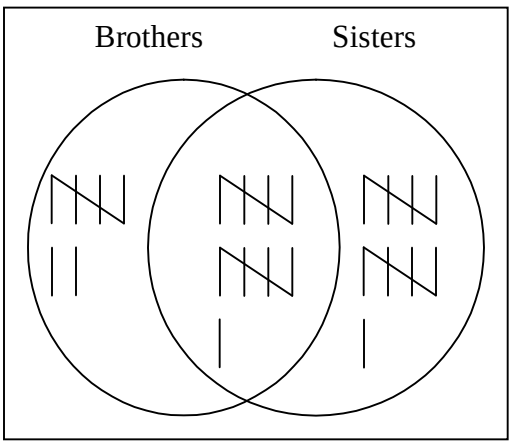
C



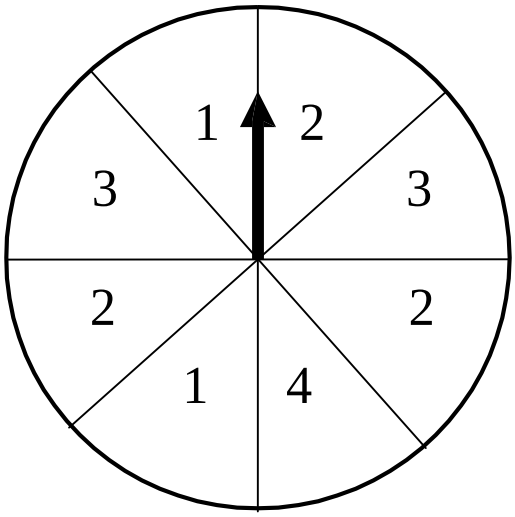
B



D



8 Ms. James will spin the spinner below 10 times. She had four students predict which number the spinner would stop on most often. The students' predictions are in the table.



Student	Prediction
Lynn	1
Tawana	3
Hazel	2
Marichu	4

The results of the experiment are shown below.

Results

1	||
2	𝍸
3	||
4	|

Which student's prediction was correct?

A Lynn

B Hazel

C Marichu

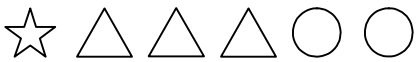
D Tawana

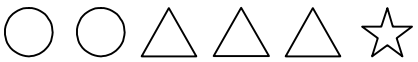
Strand 3: Patterns, Algebra, and Functions

General concepts you should know:

- Create, describe, and extend a variety of patterns using shapes, events, designs, and numbers.
- Make predictions based on a given pattern.
- Identify the pattern in skip-counting and name the next number in a pattern.
- Find the missing number in addition and subtraction number sentences.

9 Darius made a pattern by drawing 1 star, then 3 triangles, then 2 circles. Which of the following is the same as Darius' pattern?

A 

B 

C 

D 

10 Bryce, Scott, and Natalie want to equally share the money they earned for cleaning their neighbor's yard.

- *M* represents the amount of money Bryce, Scott, and Natalie earned.

Which of the following represents the amount of money each person got?

A $M - 3$

B $M + 3$

C $M \div 3$

D $M \times 3$

11 Gloria collects toy animals. Each year she has collected more toy animals than the year before, as shown in the table below.

Toy Animals Collected by Year

Year	1	2	3	4	5
Number of Toy Animals	6	10	14	18	?

If the pattern in the table continues, which of the following would be the number of toy animals Gloria would collect in year 5?

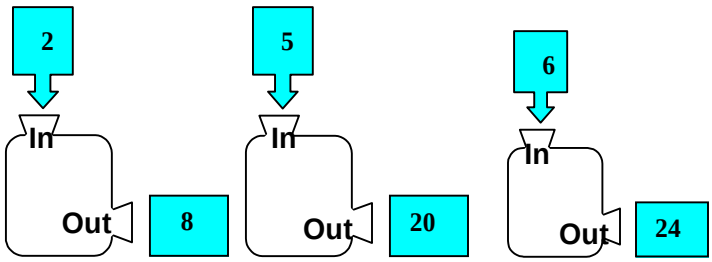
A 19

B 20

C 21

D 22

12 Caden made a number machine that used a rule to change one number into another number.



Which of the following rules did Caden use?

A Multiply by 6

B Multiply by 4

C Add 6

D Add 8

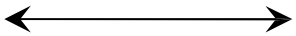
Strand 4: Geometry and Measurement

General concepts you should know:

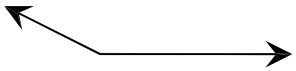
- Identify two- and three-dimensional shapes; draw two-dimensional shapes.
- Compare attributes of two-dimensional shapes and compare attributes of three-dimensional shapes.
- Predict how shapes can be changed by combining or dividing them.
- Determine and identify the characteristics (attributes) of an object that are measurable (e.g., length and weight are measurable; color and texture are not).
- Select appropriate unit of measure for a given characteristic of an object (e.g., inches, feet and yards; centimeters and meters; cups, gallons and liters; ounces, pounds, grams and kilograms).
- Select appropriate tool to measure the given characteristic of an object (e.g., ruler, thermometer, measuring cup, scale).
- Tell time to the nearest minute on digital and traditional (analog) clocks.
- Determine the passage of time (days, months and years) using a calendar.
- Compare units of measure to determine "more or less" relationships (e.g., 10 inches < 1 foot); also to determine equivalent relationships (e.g., 3 feet = 1 yard).
- Read a thermometer in Celsius and Fahrenheit to the nearest degree.
- Estimate measurements and evaluate reasonableness.

13 Which of the following appears to be an acute angle?

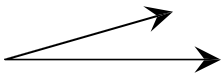
A



B

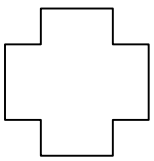


C

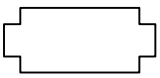


D

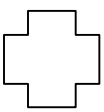
14 Which of the following is similar to the model below?



A

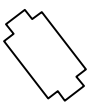


B

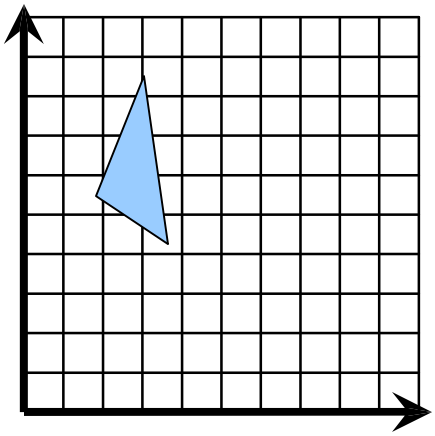


C

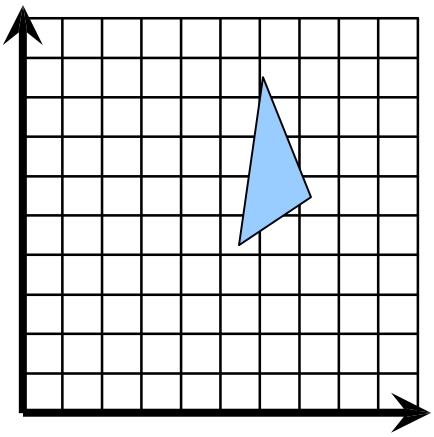
D



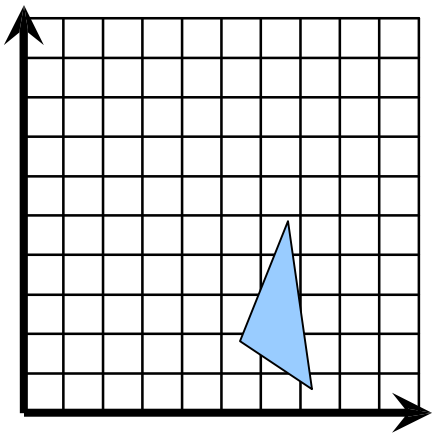
15 Which of the following shows only a rotation (turn) of the shape below?



A



C



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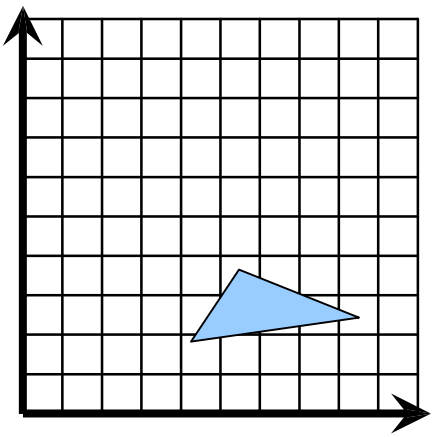
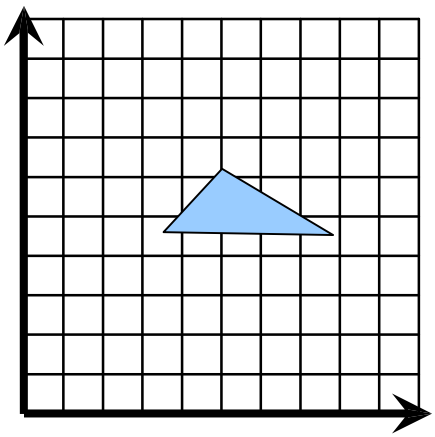
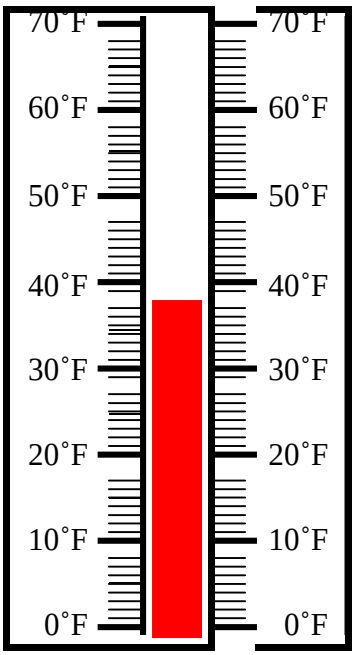


D

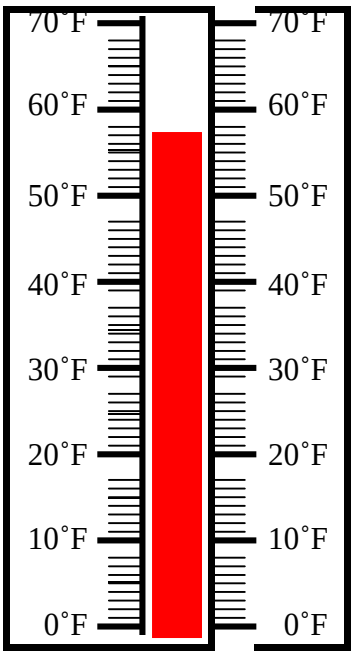


16 Which of the following shows a temperature closest to 47 ˚F?

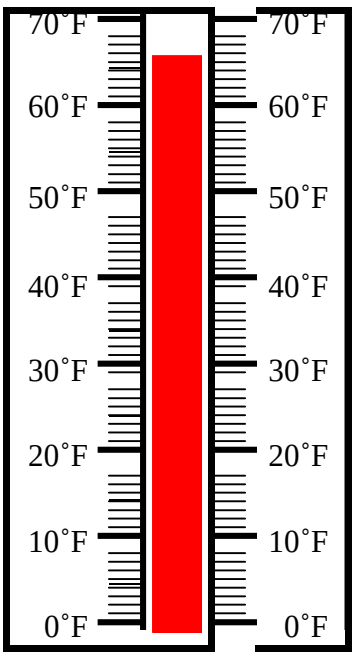
A



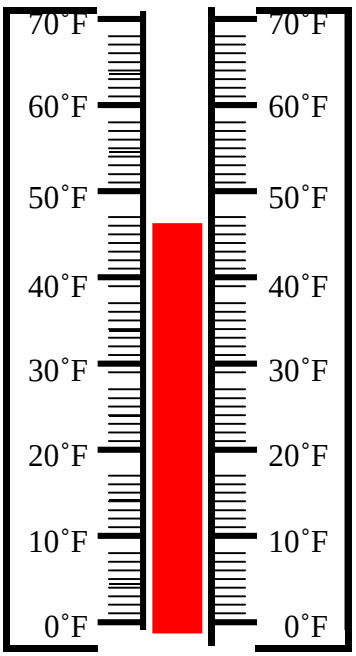
C



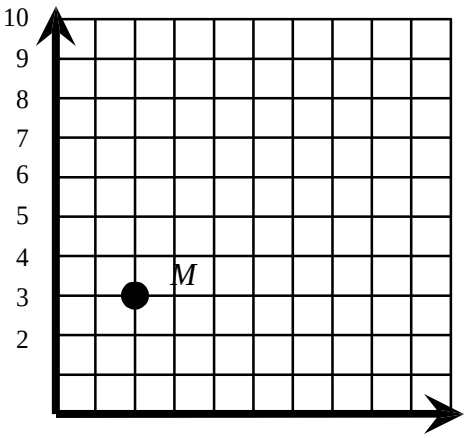
B



D



17 What ordered pair names the location of point *M*?



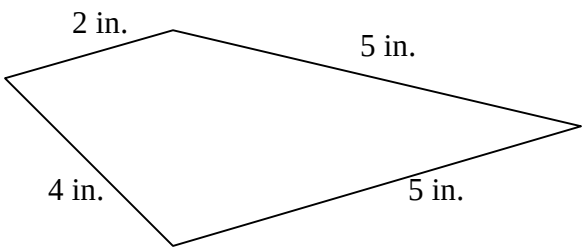
A (2, 3)

B (3, 2)

C (2, 2)

D (3, 3)

18 What is the perimeter of the polygon shown below?



A 200 in.

B 100 in.

C 16 in.

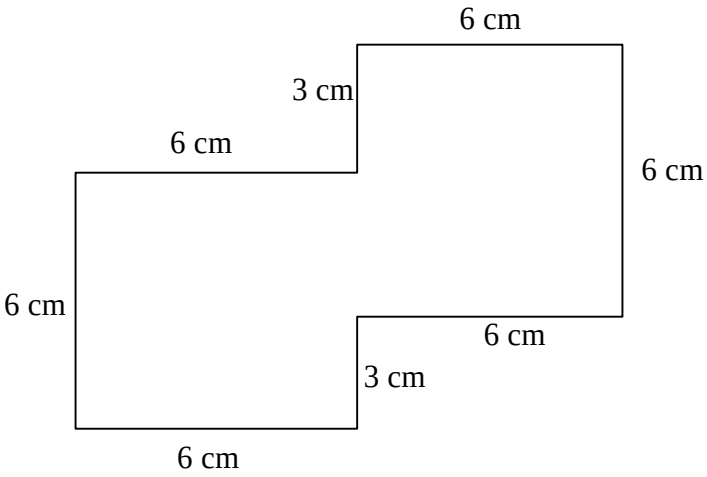
D 14 in.

Strand 5: Structure and Logic

General concepts you should know:

- Identify necessary and unnecessary information.
- Draw a conclusion from existing information.

19 Which of the following could be used to determine the perimeter of the shape below?



A $2\times3\times6\times6$

B $3\times3+6\times6$

C $3\times3\times6\times6\times6\times6\times6\times6$

D $3+3+6+6+6+6+6+6$

Scoring Key

Mathematics Key

Question #1: A
Question #2: D
Question #3: C
Question #4: A
Question #5: B
Question #6: C
Question #7: A
Question #8: B
Question #9: A
Question #10: C
Question #11: D
Question #12: B
Question #13: C
Question #14: B
Question #15: D
Question #16: D
Question #17: A
Question #18: C
Question #19: D